

REMARKS

Claims 16-38 are pending in this continuing application.

The Board of Patent Appeals and Interferences (the Board) affirmed the examiners rejection under 35 USC 103 (a) in the parent application stating that the prior art cited established a prima facie case obviousness.

While the Board noted appellants arguments concerning the unexpected results shown by the working examples, they concluded that the showing was not commensurate in scope with the degree of protection sought by the claimed subject matter.

The Board also held that the appellants must explain why the showing is considered commensurate in scope with the claims and why the results achieved in the specification would have been unexpected to one of ordinary skill in the art.

All the claims considered by the Board have been canceled and replaced with narrower claims that are clearly commensurate in scope with the showing of unexpected results.

Claim 16, the generic claim, is now limited to bridged ring metallocenes in which the transition metal is bonded to a halogen atom and an aryl-oxy substituent.

Thus, the showing is now commensurate in scope the claims since the examiner (and Board) agreed that “the data illustrate polymerization using bisindenyl monochloride aryloxy metallocenes only” (page 9 of examiner’s answer and page 5 of the Board decision). While claim 16 is not limited to bisindenyl derivatives or specifically the monochloride species, these species would be expected to yield similar results, e.g., see Tsutsui et al., col. 8, lines 46-47 and 54 and col. 9, lines 60-61.

Applicants showing in the specification is considered to be unexpected because the dihalides are generally considered to form more active polymerization catalysts than the aryloxy monohalide derivatives. This is shown by Repo et al. (see sentence bridging pages 6 and 7 of brief in parent application) and by the fact that the preferred dichloride metallocene species of Tsutsui et al. (Example 13) was less active than one of the claimed aryloxy monohalide metallocene species.

Further, as discussed in applicants brief in the parent application, even the examiner conceded that it is unexpected that the claimed compounds display comparable activity compared to their dihalide analogues (first full paragraph on page 7 of brief).

Claims such as 22 and 36 (bisindenyl-aryloxy monohalides and monochlorides), 27 (identical indenyl rings) and 28-32 substituted bisindenyl monochlorides) are even further removed from Tsutsui et al. and Repo et al.

Applicants still rely on their arguments as presented in their brief and reply brief in the parent application.

In summary, the new claims are patentable over Tsutsui et al. and Repo et al. because

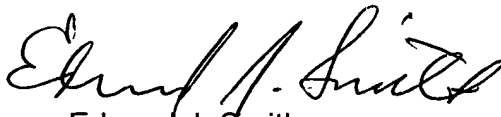
- (1) the art does not direct one of ordinary skill in the art to the claimed compounds,
- (2) assuming, arguendo, that it does, Tsutsui et al. and Repo teach away from the claimed compounds,
- (3) the claimed compounds are more soluble and more active than the closest species of this art, i.e., as is evident by this art and by the examiner, and
- (4) the new claims are clearly commensurate in scope with the data offered to support said claims.

Favorable action by the examiner is solicited.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,

KEIL & WEINKAUF

A handwritten signature in black ink, appearing to read "Edward J. Smith", is written over the printed name.

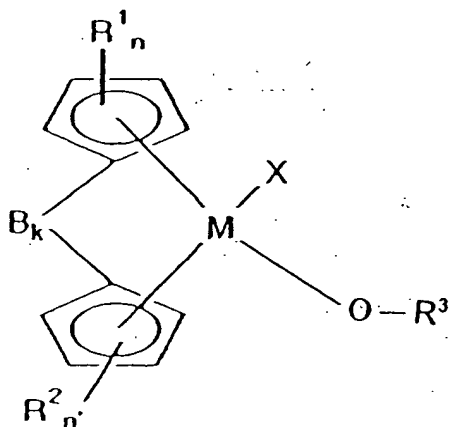
Edward J. Smith
Reg. No. 24,070

1350 Connecticut Ave., N.W.
Washington, D.C. 20036
(202)659-0100

IN THE CLAIMS

Claims 1-15 are canceled. Claims 16-36 have been amended as follows.

1. (canceled)
2. (canceled)
3. (canceled)
4. (canceled)
5. (canceled)
6. (canceled)
7. (canceled)
8. (canceled)
9. (canceled)
10. (canceled)
11. (canceled)
12. (canceled)
13. (canceled)
14. (canceled)
15. (canceled)
16. (new) A compound of the formula (I),



where

M is a metal of transition group IV, V or VI of the Periodic Table of the Elements,

R¹ are identical or different and are each a radical Si (R¹²)₃, where R¹² are identical or different and are each a hydrogen atom or a C₁-C₄₀-group or R¹ is a C₁-C₃₀-group, or two or more radicals R¹ may be connected to one another in such a way that the radicals R¹ and the atoms of the cyclopentadienyl ring which connect them form a C₄-C₂₄-ring system which may in turn be substituted,

R² are identical or different and are each a radical Si (R¹²)₃, where R¹² are identical or different and are each a hydrogen atom or a C₁-C₄₀-group, or R²

is a C₁-C₃₀-group, or two or more radicals R² may be connected to one another in such a way that the radicals R² and the atoms of the cyclopentadienyl ring which connected them form a C₄-C₂₄-ring system which may in turn be substituted,

R³ are identical or different and are each a C₆-C₂₄ aryl, C₅-C₂₄-heteroaryl, C₇-C₃₀-alkylaryl, fluorinated C₆-C₂₄-aryl, or fluorinated C₇-C₃₀-alkylaryl,

X is a halogen atom,

n is from 0 to 4,

n' is from 0 to 4,

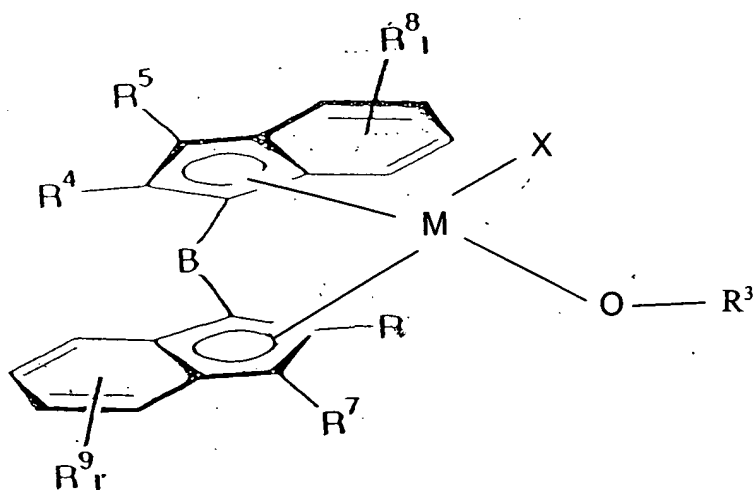
k is 1,

B is abridging structural element between the two cyclopentadienyl rings and

one or both cyclopentadienyl rings are substituted in such a way that they form an indenyl ring.

17. (new) The compound of claim 16 wherein R³ is C₆-C₂₄ aryl, C₅-C₂₄-heteroaryl or C₇-C₃₀-alkylaryl.

18. (new) The compound of claim 17 wherein R^3 is C_6-C_{24} aryl or C_7-C_{30} -alkylaryl.
19. (new) The compound of claim 18 wherein the aryl is phenyl or alkyl-phenyl.
20. (new) The compound of claim 19 wherein the aryl is C_1-C_9 -alkyl-phenyl.
21. (new) The compound of claim 16 wherein M is Ti, Zr or Hf.
22. (new) The compound of claim 21 having the formula



where

$R^4 - R^7$ are identical or different and are each a hydrogen atom or a C_1-C_{20} -group,

R^8, R^9 are identical or different and are each a hydrogen atom, a halogen atom or a C_1 - C_{20} -group, and two radicals R^8 or R^9 may form a monocyclic or polycyclic ring system which may in turn be substituted,

R^3, M and X are as previously defined,

and

l, l' are identical or different and are each an integer from zero to 4.

23. (new) The compound of claim 22 wherein R^3 is C_6 - C_{24} -aryl, C_5 - C_{24} -heteroaryl or C_7 - C_{30} -alkylaryl.
24. (new) The compound of claim 23 wherein R^3 is C_6 - C_{24} aryl or C_7 - C_{30} -alkylaryl.
25. (new) The compound of claim 24 wherein aryl is phenyl or alkyl-phenyl.
26. (new) The compound of claim 25 wherein the aryl is C_1 - C_9 -alkyl-phenyl.
27. (new) The compound of claim 24 wherein the indenyl rings are identical.

28. (new) The compounds of claim 27 wherein M is Zr, the indenyl rings are 2-methyl-4,5-benzoidenyl or 2-methyl-indenyl and X is chlorine.
29. (new) The compound of claim 28 wherein the indenyl rings are 2-methyl-4,5-benzoidenyl.
30. (new) The compound of claim 28 wherein the indenyl rings are 2-methyl-indenyl.
31. (new) The compound of claim 29 wherein R³ is 2,4-tert-butyl-phenyl, 2,4-di-tert-pentyl-phenyl or 2-isopropyl-5-methyl-phenyl.
32. (new) The compound of claim 30 wherein and R³ is 2,4-di-tert-butyl-phenyl or 2-isopropyl-5-methyl-phenyl.
33. (new) The compound of claim 27 wherein B is SiR¹³R¹⁴ wherein R¹³ and R¹⁴ are identical or different and are each hydrogen or C₁-C₂₀-hydrocarbon-containing group.
34. (new) The compound of claim 31 wherein B is dimethylsilanediyl.
35. (new) The compound of claim 32 wherein B is dimethylsilanediyl.

36. (new) The compound of claim 22 wherein X is chlorine.
37. (new) A catalyst comprising at least one compound as claimed in claim 16 and a support and, optionally, a cocatalyst.
38. (new) A process for preparing a polyolefin which comprises polymerizing an olefinic monomer in the presence of a catalyst as claimed in claim 33.